

Amendments to the Claims:

1. (Currently Amended) A porous particulate material for treating a fluid containing a contaminant, the particulate material comprising a mixture of a cementitious material and a partially ~~neutralised~~ neutralized red mud, wherein the partially ~~neutralised~~ neutralized red mud has been pre-treated by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent.
2. (Previously Presented) A porous particulate material as claimed in claim 1, wherein the volume of the pores is between 10% and 90% of the volume of the particulate material.
3. (Previously Presented) A porous particulate material as claimed in claim 1, wherein at least 10% of the pores are open cell or interconnected pores.
4. (Previously Presented) A porous particulate material as claimed in claim 1, wherein the pores of the particulate material have a distributed pore size.
5. (Previously Presented) A porous particulate material as claimed in claim 1, wherein the pore size of the particulate material is within the range of 0.1 to 2000 μm .
6. (Currently Amended) A porous particulate material for treating a fluid containing a contaminant, the particulate material comprising a coherent mass of particles, each of which comprises a mixture of a cementitious material and a partially ~~neutralised~~ neutralized red mud, wherein the partially ~~neutralised~~ neutralized red mud has been pre-treated by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent.
7. (Previously Presented) A porous particulate material as claimed in claim 6, having a form selected from the group consisting of granules, pellets, briquettes, extrudites, gravel, cobbles, blocks, interlocking blocks and slabs.

8. (Canceled)

9. (Currently Amended) A composition for forming porous particulate material for treating a fluid containing a contaminant, the composition comprising bauxite refinery residue and a cementitious binder, wherein the cementitious binder is present in a sufficient quantity to form a porous particulate material according to claim 1 ~~or claim 6~~.

10. (Currently Amended) A composition as claimed in claim 9 ~~for forming porous particulate material for treating a fluid containing a contaminant, the composition comprising bauxite refinery residue and a cementitious binder, wherein the cementitious binder is present in a sufficient quantity to form a porous particulate material according to claim 1 or claim 6~~, the composition further comprising a pore generating agent capable of generating pores within the particulate material upon mixing the composition in an aqueous medium.

11. (Currently Amended) A composition as claimed in claim 10 ~~for forming porous particulate material for treating a fluid containing a contaminant, the composition comprising bauxite refinery residue and a cementitious binder, wherein the cementitious binder is present in a sufficient quantity to form porous particulate material according to claim 1 or claim 6~~, the composition further comprising a pore generating agent capable of generating pores within the particulate material upon mixing the composition in an aqueous medium, wherein the pore generating agent is selected from the group consisting of hydrogen peroxide, organic polymers and a foaming agent.

12. (Currently Amended) A composition as claimed in claim 9 ~~for forming porous particulate material for treating a fluid containing a contaminant, the composition comprising bauxite refinery residue and a cementitious binder, wherein the cementitious binder is present in a sufficient quantity to form porous particulate material according to claim 1 or claim 6~~, the composition further comprising a ~~phosphorising~~ phosphorizing agent.

13. (Currently Amended) A method for producing porous particulate material for treating a fluid containing a contaminant, the particulate material comprising a coherent mass of particles, the method comprising:

- (a) partially ~~neutralising~~ neutralizing red mud by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent;
- (b) mixing the partially ~~neutralised~~ neutralized red mud with a cementitious binder in an aqueous medium to form a slurry; and
- (c) curing the slurry for a period of time sufficient to form the porous particulate material.

14. (Currently Amended) A method for producing a porous particulate material for treating a fluid containing a contaminant, the particulate material comprising a coherent mass of particles, the method comprising:

- (a) partially ~~neutralising~~ neutralizing red mud by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent;
- (b) mixing the partially ~~neutralised~~ neutralized red mud with a cementitious binder in an aqueous medium to form a slurry; and
- (c) curing the slurry in a ~~mould~~ mold to form a coherent mass of the porous particulate material, wherein the ~~mould~~ mold is shaped to impart to the porous particulate material a form selected from the group consisting of granules, pellets, briquettes, extrudites, gravel, cobbles, blocks, interlocking blocks and slabs.

15. (Currently Amended) A method for producing porous particulate material for treating a fluid containing a contaminant, the particulate material comprising a coherent mass of particles, the method comprising:

- (a) partially ~~neutralised~~ neutralizing red mud by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent;

(b) mixing the partially ~~neutralised~~ neutralized red mud with a cementitious binder in aqueous medium to form a slurry; and

(c) curing the slurry for a period of time sufficient to form the porous particulate material,

wherein a ~~phosphorising~~ phosphorizing agent is added in step (a) and mixed with the residue and the binder to assist in ~~stabilisation~~ stabilization of the pore structures during curing.

16. (Currently Amended) A method as claimed in claim 13 ~~claim 13,14 or 15~~, wherein the slurry comprises from about 1% to about 99% w/w of bauxite refinery residue and from about 1% to about 99% w/w of a cementitious binder.

17. (Currently Amended) A method as claimed in claim 13 ~~claim 13,14 or 15~~, wherein the slurry further comprises one or more additives selected from the group consisting of sand, ground caustic steel slag residue, alkali metal hydroxides, alkali metal carbonates, alkaline earth metal hydroxides, alkaline earth metal carbonates, alkaline earth metal oxides, calcium hypochlorite, sodium alum, ferrous sulfate, ferric sulphate, ferric chloride, ~~aluminium~~ aluminum sulfate, gypsum, phosphates, phosphoric acid, hydrotalcite, zeolites, olivines, pyroxenes, barium chloride, silicic acid and salts thereof, meta silicic acid and salts thereof, an alunite group mineral, magadiite, a silica provider, a ~~plasticiser~~ plasticizer, a ~~polymeriser~~ polymerizer, a ~~phosphatising~~ phosphatizing agent, and an air entraining agent.

18. (Currently Amended) A method as claimed in claim 13 ~~claim 13,14 or 15~~, wherein the bauxite refinery residue has a pH less than about 10.5.

19. (Currently Amended) A method as claimed in claim 13 ~~claim 13,14 or 15~~, wherein the cementitious binder is capable of forming a tobermorite gel.

20. (Currently Amended) A method for treating a fluid containing a contaminant, the method comprising;

- providing a permeable mass of porous particulate materials according to claim 1 ~~or claim 6~~, and
- passing the fluid containing the contaminant through the permeable mass of porous particulate materials.

21. (Currently Amended) A cementitious composition comprising partially ~~neutralised~~ neutralized red mud and cement, wherein the partially ~~neutralised~~ neutralized red mud has been pre-treated by contacting it with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent.
22. (Currently Amended) A cementitious composition as claimed in claim 21, wherein the cement is present in the composition in a concentration of from about 1 wt% to about 99 wt% and the partially ~~neutralised~~ neutralized red mud is present in the composition in a concentration of from about 99 wt% to about 1 wt%.
23. (Previously Presented) A cementitious composition as claimed in claim 21, further comprising from 0.2 wt % to 3 wt% of the cement of a super plasticizer.
24. (Currently Amended) A cementitious composition as claimed in claim 21, further comprising a ~~plasticiser~~ plasticizer selected from the group consisting of cellulose ethers, methyl-hydroxyethyl-cellulose (MHEC) and hydroxypropyl-methyl-cellulose (HPMC).
25. (Currently Amended) A process for the manufacture of a cementitious composition comprising:
- (a) contacting red mud recovered from the Bayer Process with water having a total hardness supplied by calcium, magnesium or a combination thereof, of at least 3.5 millimoles per ~~litre~~ liter calcium carbonate equivalent, so as to obtain a partially ~~neutralised~~ neutralized red mud; and
 - (b) mixing the partially ~~neutralised~~ neutralized red mud with cement so as to obtain the cementitious composition.

26. (Previously Presented) A process for the manufacture of a cementitious composition as claimed in claim 25, wherein, in step (a), the pH of the red mud is reduced to a value of at most about 10.5 and at least about 8.2.

27. (Currently Amended) A process for the manufacture of a cementitious composition as claimed in claim 25, including a step (a1), after step (a) and before step (b), in which the partially ~~neutralised~~ neutralized red mud is dried to obtain a dry solid material.

28. (Currently Amended) A process for the manufacture of a cementitious composition as claimed in claim 25, including a step (a1), after step (a) and before step (b), in which the partially ~~neutralised~~ neutralized red mud is dried to obtain a dry solid material and a further step (a2), after step (a1) and before step (b), in which the dry solid material of step (a1) is comminuted so as to obtain a partially ~~neutralised~~ neutralized dry, comminuted red mud.

29. (New) A composition for forming porous particulate material for treating a fluid containing a contaminant, the composition comprising bauxite refinery residue and a cementitious binder, wherein the cementitious binder is present in a sufficient quantity to form a porous particulate material according to claim 6.

30. (New) A composition as claimed in claim 29, the composition further comprising a pore generating agent capable of generating pores within the particulate material upon mixing the composition in an aqueous medium.

31. (New) A composition as claimed in claim 30, wherein the pore generating agent is selected from the group consisting of hydrogen peroxide, organic polymers and a foaming agent.

32. (New) A composition as claimed in claim 29, the composition further comprising a phosphorizing agent.

33. (New) A method as claimed in claim 14, wherein the slurry comprises from about 1% to about 99% w/w of bauxite refinery residue and from about 1% to about 99% w/w of a cementitious binder.

34. (New) A method as claimed in claim 15, wherein the slurry comprises from about 1% to about 99% w/w of bauxite refinery residue and from about 1% to about 99% w/w of a cementitious binder.

35. (New) A method as claimed in claim 14, wherein the slurry further comprises one or more additives selected from the group consisting of sand, ground caustic steel slag residue, alkali metal hydroxides, alkali metal carbonates, alkaline earth metal hydroxides, alkaline earth metal carbonates, alkaline earth metal oxides, calcium hypochlorite, sodium alum, ferrous sulfate, ferric sulphate, ferric chloride, aluminum sulfate, gypsum, phosphates, phosphoric acid, hydrotalcite, zeolites, olivines, pyroxenes, barium chloride, silicic acid and salts thereof, meta silicic acid and salts thereof, an alunite group mineral, magadiite, a silica provider, a plasticizer, a polymerizer, a phosphatizing agent, and an air entraining agent.

36. (New) A method as claimed in claim 15, wherein the slurry further comprises one or more additives selected from the group consisting of sand, ground caustic steel slag residue, alkali metal hydroxides, alkali metal carbonates, alkaline earth metal hydroxides, alkaline earth metal carbonates, alkaline earth metal oxides, calcium hypochlorite, sodium alum, ferrous sulfate, ferric sulphate, ferric chloride, aluminum sulfate, gypsum, phosphates, phosphoric acid, hydrotalcite, zeolites, olivines, pyroxenes, barium chloride, silicic acid and salts thereof, meta silicic acid and salts thereof, an alunite group mineral, magadiite, a silica provider, a plasticizer, a polymerizer, a phosphatizing agent, and an air entraining agent.

37. (New) A method as claimed in claim 14, wherein the bauxite refinery residue has a pH less than about 10.5.

38. (New) A method as claimed in claim 15, wherein the bauxite refinery residue has a pH less than about 10.5.

39. (New) A method as claimed in claim 14, wherein the cementitious binder is capable of forming a tobermorite gel.
40. (New) A method as claimed in claim 15, wherein the cementitious binder is capable of forming a tobermorite gel.
41. (New) A method for treating a fluid containing a contaminant, the method comprising;
- providing a permeable mass of porous particulate materials according to claim 6, and
 - passing the fluid containing the contaminant through the permeable mass of porous particulate materials.